

***APHIS CRASSICAUDA*, N. SP. (HOMOPTERA: APHIDIDAE), WITH A KEY  
TO ALATE SPECIES OF *APHIS* ON *VIBURNUM* SPP.  
IN THE UNITED STATES**

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**Abstract.**—All morphs (fundatrices, apterous viviparous females, alate viviparous female, apterous oviparous females, and apterous males) of *Aphis crassicauda*, n. sp., are described. Collections were made in Wake and Orange counties, NC; Starved Rock State Park, IL; and Phillipsburg, PA. A key is given to the alate viviparous females of the following species of *Aphis* reported on *Viburnum* spp. in the United States: *A. crassicauda*; *A. spiraeicola* Patch, *A. viburni* Scopoli, *A. viburnicola* Gillette, and *A. viburniphila* Patch.

**Key Words:** Aphididae, *Aphis*, *Viburnum*, United States, key

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*Aphis crassicauda* Smith and Eckel, n. sp., was found on heavily infested plants of *Viburnum dentatum* that had been used in landscaping at a new office building in Umstead State Park (Wake Co.), NC. All morphs (fundatrices, alate viviparous females, apterous viviparous females, apterous oviparous females, apterous males, and eggs) were collected on these bushes during 1959 and 1960. *Aphis crassicauda* has not been collected colonizing on other genera of plants.

Other collections of *A. crassicauda* have been made on other plants of *Viburnum dentatum* in other areas of Umstead Park, Reedy Creek State Park, and Orange Co., NC, and in Starved Rock State Park, IL, and Phillipsburg, PA. However, plants at these areas were not as heavily infested as the transplanted plants. Could the transplanting of the plants have affected them in such a way that they were very favorable food for the aphids?

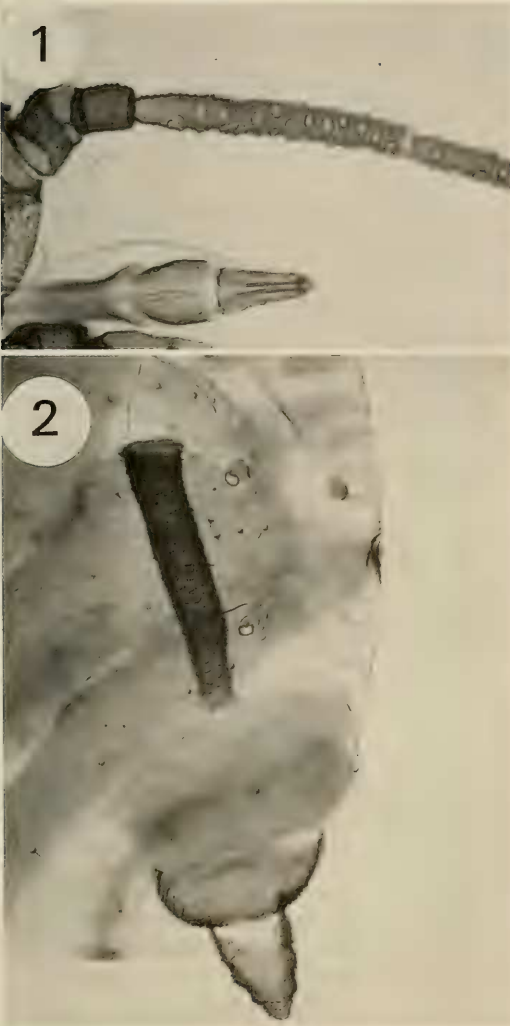
*Aphis viburni* Scopoli has been reported from Illinois, Kansas, and Nebraska (see Thomas 1879, Smith and Parron 1978:47),

but we have not seen specimens from North America.

***Aphis crassicauda* Smith and Eckel,  
NEW SPECIES**

Fundatrices (Fig. 7).—Color of living specimens, tan to light brown. Cleared specimens: Dusky on head; antennal segments I, II, III–IV (distal tip), V and VI; rostral III and IV+V; thorax (lateral plates); legs dusky on coxae, trochanters, femorae (distal three-fourths), tibiae (distal one-tenth), tarsi; siphunculi; cauda; anal and genital plates.

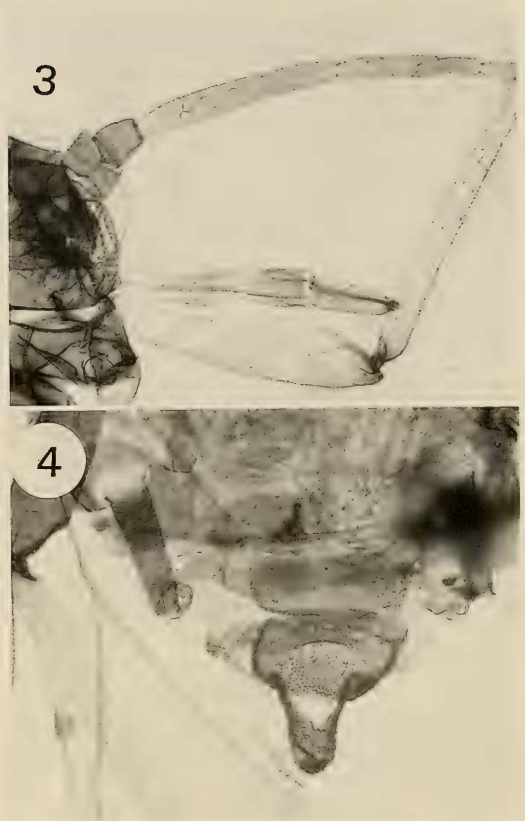
Measurements (the first is that of a single specimen (60-26 #1), the measurements in parentheses represent the range of 8 specimens unless indicated otherwise). All measurements in millimeters. Length of body, 1.8 (1.8–2.0, 4 specimens); width of head, 0.45 (0.42–0.48); antennae with 5 segments (antennal segments III–IV apparently combined, V and VI have primary rhinaria) without secondary rhinaria. Antennal segment III–IV, 0.35 (0.21–0.37), V, 0.15 (0.12–0.19), VI, 0.10 (0.10–0.12) + 0.17



Figs. 1, 2. *Aphis viburnicola*, alate viviparous female, Grand Jct., Colo. (Paul and Carolynn Sanda), 28 April 1993, on *Viburnum* sp. 1, Portion of head, antenna and rostrum. 2, Tip of abdomen with siphunculus and cauda.

(0.12–0.17); Rostral IV+V, length 0.13 (0.10–0.14), width 0.08 (0.06–0.08); hind tibia, 0.89 (0.75–0.97); metatarsomere II, 0.11 (0.10–0.11); siphunculus, 0.22 (0.19–0.22); cauda, length 0.08 (0.06–0.09), width 0.15 (0.10–0.15), and bearing 11 setae (11–18). Antennae without secondary rhinaria. Unguis less than  $2\times$  base.

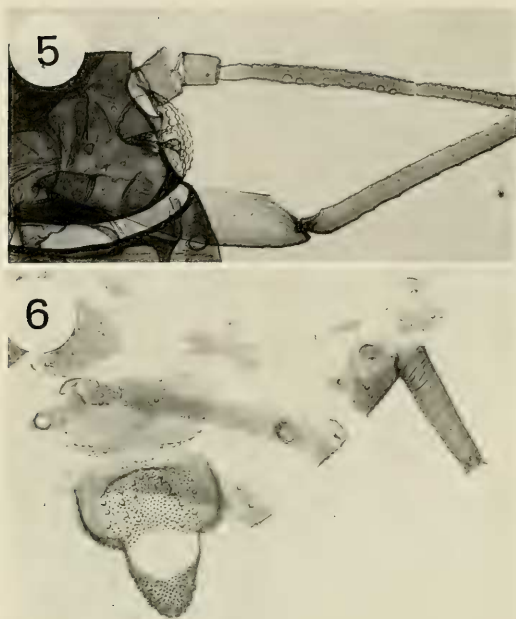
Apterous viviparous females.—Color of living specimens, tan to light brownish.



Figs. 3, 4. *Aphis viburni*, Skive, Denmark (O. Heie), 19 July 1958, on *Viburnum opalus*, alate viviparous female. 3, Portion of head and antenna. 4, Tip of abdomen with siphunculi and cauda.

Color of cleared specimens, dusky on head, antennal segments I, II, V and VI, legs, coxae, trochanters, femora, tibiae (types), tarsi, Rostral IV+V, siphunculi and cauda.

Measurements (the first measurement is that of a single specimen, the measurements in parentheses represent the range of 6 specimens). Length of body, 1.39 (1.10–2.08); width of head, 0.40 (0.35–0.48); antennae may be 5 or 6 segmented, usually 6; antennal segment III, 0.20 (0.19–0.35), IV, 0.08 (0.08–0.17), V, 0.12 (0.11–0.18), VI, 0.08 (0.06–0.08) + 0.22 (0.10–0.23); Rostral IV+V, length 0.12 (0.11–0.14), width 0.07 (0.06–0.09); hind tibia, 0.69 (0.40–0.95); metatarsomere II, 0.11 (0.10–0.12); siphunculus, 0.17 (0.13–0.26); cauda,



Figs. 5, 6. *Aphis crassicauda*, alate viviparous female, Umstead Park, Wake Co., N.C., 27 April 1960 (Smith and Tuatay), coll. 60-187, specimen no. 2 (holotype). 5, Portion of head and antenna. 6, Tip of abdomen with siphunculus and cauda.

length 0.07 (0.04–0.08), width 0.09 (0.09–0.14), and bearing 11 setae (6–19). Antennae without secondary rhinaria. Unguis more than  $2\times$  base. Note: In most apterae observed, the antennae were 6-segmented. However, some antennae appeared with only partial segmentation between antennal segment III and antennal segment IV, or, they had only 5-segmented antennae. One was 6-segmented on one side, and 5-segmented on the other side. Some apterae are small and have 5-segmented antennae.

Alate viviparous females (Figs. 5, 6).—Color of living specimens: brownish to rose color. Color of cleared specimens: dark on head, antennae, rostrum III and IV+V, thorax, and legs (except profemora which are lighter). Abdomen with lateral areas (spots), bars on dorsal abdominal segment VI–VII–VIII; siphunculi, cauda, anal, and genital plates.

Measurements (the first measurement is

that of a single specimen (60-187 #2, the holotype). The measurements in parentheses represent the range of 11 specimens). Length of body, 1.75 (1.07–1.85); width of head, 0.39 (0.38–0.42); antennal segment III, 0.31 (0.31–0.35), IV, 0.17 (0.16–0.21), V, 0.16 (0.16–0.19), VI, 0.09 (0.09–0.11) + 0.28 (0.26–0.32); rostral IV+V, length 0.13 (0.11–0.15), width 0.07 (0.05–0.10); hind tibiae, 0.90 (0.80–0.99); metatarsomere II, 0.11 (0.10–0.12); siphunculi, 0.21 (0.18–0.25); cauda, length 0.06 (0.05–0.08), width 0.10 (0.07–0.12), and bearing 14 setae (9–17). Tarsal chaetotaxy 3-3-2. Secondary rhinaria on antennal segment III, 9–10 (7–14) in nearly a straight row.

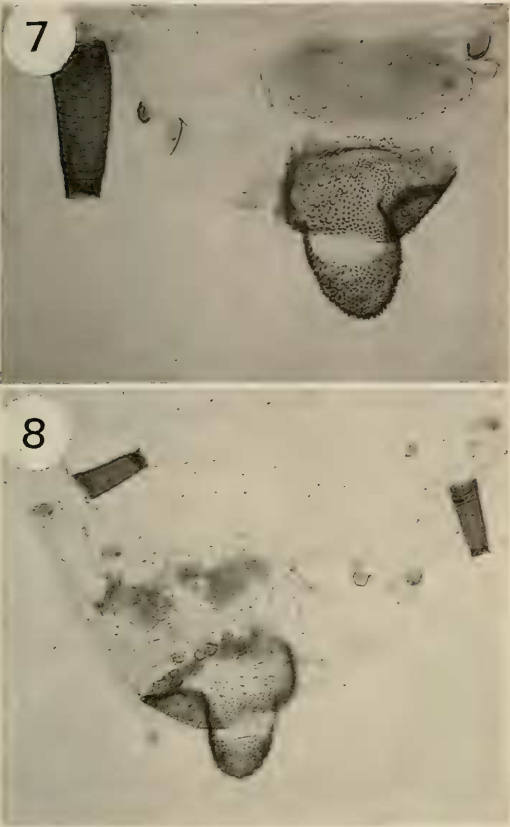
Apterous oviparous females (Fig. 8).—Color of living specimens, reddish-brown. Color of cleared specimens dusky on head; antennal segments I, II (III and IV?), distal one-half, V and VI, rostrum III, IV+V; coxae, trochanters, femora, tibiae (tip), tarsi; siphunculi; cauda, and anal plate.

Measurements (the first measurement is that of a single specimen. Measurements in parentheses represent the range of 6 specimens). Length of body, 1.69 (1.45–1.82); width of head, 0.35 (0.32–0.40). Some specimens have 6-segmented antennae.

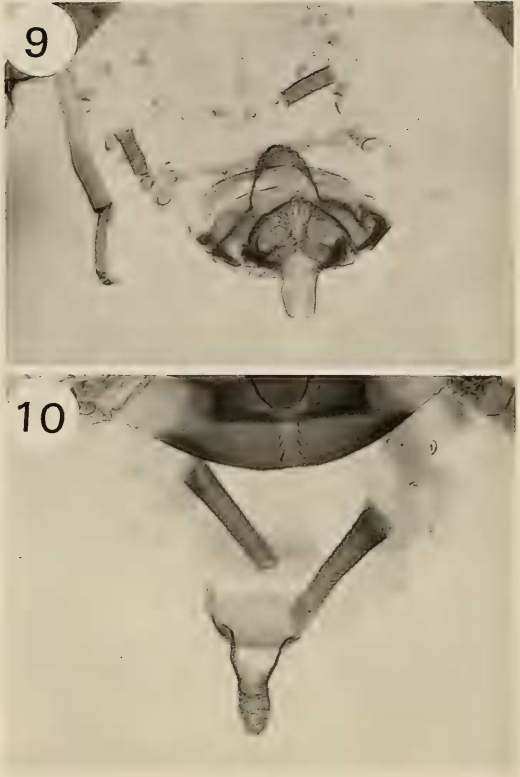
The following measurements are for specimens with 5-segmented antennae. Antennal segments: antennal segments III and IV appear to be fused in some specimens; III–IV, 0.29 (0.17–0.29), V, 0.14 (0.1–0.14), VI, 0.09 (0.086–0.096) + 0.25 (0.22–0.25); rostral IV+V, length 0.12 (0.11–0.12), width 0.06 (0.06–0.08); hind tibiae, 0.71 (0.62–0.71); metatarsomere II, 0.11 (0.09–0.11); siphunculi, 0.13 (0.12–0.14); cauda, length 0.07 (0.05–0.07), width 0.11 (0.09–0.11), and bearing 20 setae (20–24). Antennae without secondary rhinaria. Hind tibiae not swollen, with 0–10 pseudosensoria on distal half.

Apterous male (Fig. 9).—Color of living specimens, reddish brown. Color of cleared specimens dusky on head, antennae, legs, rostrum (especially segments III and IV+V), siphunculi, cauda, genitalia, ab-





Figs. 7, 8. *Aphis crassicauda*. 7, Fundatrix, coll. 60-26, specimen no. 6., portion of tip of abdomen with siphunculus and cauda. 8, Oviparous female, Umstead Park, Wake Co., N.C., 4 November 1959 (C. F. and C. K. Smith), coll. no. 59-1493, specimen no. 1, portion of tip of abdomen with siphunculi and cauda.



Figs. 9, 10. 9, *Aphis crassicauda*, Umstead Park, Wake Co., N.C., 4 November 1959 (C. F. and C. K. Smith), coll. 59-1483, specimen no. 2, portion of abdomen of apterous male with siphunculi, cauda, and genitalia. 10, *Aphis spiraecola*, Wilson, N.C., 27 May 1993, specimen no. 1, on *Viburnum* sp., portion of abdomen with siphunculi and cauda of alate viviparous female.

dominal segments V, VI with sclerotic area around medial setae, abdominal segments VII and VIII with dorsal bars.

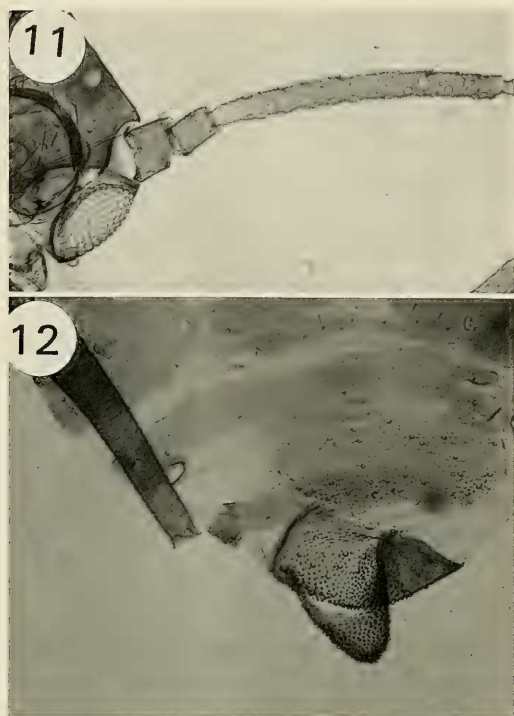
Measurements (the first measurement is that of a single specimen. Measurements in parentheses represent the range of 3 specimens). Length of body, 1.35 (1.21–1.35); width of head, 0.40 (0.37–0.40); antennal segment III, 0.21 (0.21–0.25), IV, 0.14 (0.13–0.14), V, 0.14 (0.13–0.14), VI, 0.08 (0.08–0.09) + 0.21 (0.19–0.24); hind tibia, 0.63 (0.63–0.72); metatarsomere II, 0.09; siphunculi, 0.09 (0.08–0.09); cauda, length 0.06 (0.04–0.06), width 0.10 (0.08–0.10), and bearing 11 setae. Secondary rhinaria on antennal segment III, 2 (1–9), IV, 3 (3–6),

V, 2 (2–3). Only 3 specimens available, one has antennal segments III and IV coalesced. Males may have pseudosensoria on distal half of hind tibiae.

Eggs.—Eggs are tan when first laid, then turn black.

Discussion.—*Aphis crassicauda* Smith and Eckel is similar to *Aphis viburniphila* Patch (1917: 416) in that the hind tibia of oviparous females not swollen, and pseudosensoria (if any) are on the distal portion.

The cauda of *A. crassicauda* is blunt or rounded (Figs. 6–8); whereas, the cauda of *A. viburniphila* Patch is more “cone-shaped” (Fig. 12).



Figs. 11, 12. *Aphis viburniphila*, alate viviparous female, coll. 64-83, Raleigh, N.C. (C. F. Smith and Hille Ris Lambers), 20 April 1964. 11, Portion of head and antenna. 12, Tip of abdomen with siphunculus and cauda.

Apterous viviparous females of *A. viburniphila* usually have secondary rhinaria on antennal segment III; whereas, they are absent on antennal segment III of apterous viviparous females of *A. crassicauda*. Alate viviparous females of *A. viburniphila* have 21–28 secondary rhinaria scattered on antennal segment III; whereas, antennal segment III of alate viviparous females of *A. crassicauda* have 7–14 secondary rhinaria in nearly a straight row.

Types.—Holotype from collection 60-187. The holotype (60-187 #2 an alate viviparous female) and some paratypes are in the National Museum of Natural History, Washington, DC. Other paratypes are in the Canadian National Collection, Ottawa; The Natural History Museum, London; North Carolina State University, Raleigh; and the collections of the authors.

## Collections

(with abbreviations of morphs collected)

North Carolina (Wake Co.), Umstead State Park, type locality.

1959, coll. no. 59-77, 5 May, 3 slides (apt, al)

coll. no. 59-147, 19 May, 2 slides (apt, al)

coll. no. 59-219, 27 May, 3 slides (apt, al)

coll. no. 59-377, 4 July, 4 slides (apt)

coll. no. 59-1215, 2 Sept., 2 slides (apt)

coll. no. 59-1301, 4 Oct., 2 slides (ovip)

coll. no. 59-1369, 12 Oct., 7 slides (ovip)

coll. no. 59-1432, 22 Oct., 4 slides (ovip)

coll. no. 59-1493, 4 Nov., 4 slides (ovip, male)

1960, coll. no. 60-20, 15 April, 2 slides (ny)

coll. no. 60-26, 16 April, 12 slides (fund)

coll. no. 60-185, 4 April, 4 slides (fund)

coll. no. 60-187, 17 April, 4 slides (1 alatoid ny, fund, al)

coll. no. 60-1054, 11 Sept., 4 slides (apt, ovip)

coll. no. 60-1132, 12 Oct., 4 slides (ovip)

coll. no. 60-1194, 26 Oct., 4 slides (ovip, male)

1961, coll. no. 61-13, 3 May, 1 slide (al, apt)

coll. no. 61-32, 25 May, 1 slide (apt)

coll. no. 61-198, 6 Sept., 1 slide (apt, ovip)

1979, coll. no. 79-3, 1 April, 6 slides (fund, al)

North Carolina (Orange Co.)

1961, coll. 61-280, 25 Sept., 4 slides (apt, al) on *Viburnum*

Illinois, Starved Rock State Park

1960, coll. 60-583, 4 slides on *Viburnum*  
Pennsylvania, Phillipsburg

1961, coll. no. 61-280, 4 slides on *Viburnum*

Summary of Dates of Collection of  
Different Morphs in Umstead Park

- ny = nymphs only: 15 April
- fund = fundatrices, 16 and 17 April
- al = alate viviparous females: 17 April to 27 May
- apt = apterous viviparous females: 5 May to 11 Sept.
- ovip = apterous oviparous females: 11 Sept. to 4 Nov.
- male = apterous males: 26 Oct.

KEY TO ALATE VIVIPAROUS *APHIS* SPP. ON  
*VIBURNUM* SPP. IN NORTH AMERICA

- 1 Cauda with 10 or more setae. Abdomen without a dark, dorsal patch, may have transverse dark bars ..... 2
- 1' Cauda with 5-6 setae. Abdomen with a dark, dorsal patch (Figs. 1, 2) .....  
..... *Aphis viburnicola* Gillette
- 2(1) Cauda not longer than broad (Caudal length and width in key refers to length on median line of sclerotic or hard portion and width at base (center) of this portion.) ..... 3
- 2' Cauda longer than broad ..... 4
- 3(2) Abdomen with dorsal transverse bars on segments I-VIII. Lateral tubercles conspicuous on segments I-VII (Figs. 3, 4) (see Smith and Parron 1978:47) .....  
..... *Aphis viburni* Scopoli
- 3' Abdomen without dorsal transverse bars on segments I-V (may have indications of bars). Lateral tubercles not conspicuous on segments II-VI (Figs. 5-9) .....  
..... *Aphis crassicauda*, n. sp.

- 4(2') Unguis equal to or longer than antennal segment III ..... 5
- 4' Unguis usually distinctly shorter than antennal segment III (Figs. 11, 12) .....  
..... *Aphis viburniphila* Patch
- 5(4) Secondary rhinaria not more than 10 (4-10) on antennal segment III (Fig. 10) .....  
..... *Aphis spiraeicola* Patch
- 5' Secondary rhinaria more than 10 (12-19) on antennal segment III (Fig. 3) .....  
..... *Aphis viburni* Scopoli

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